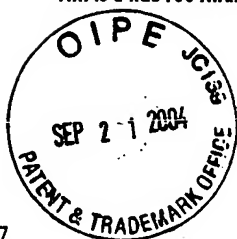




Micropyretics
Heaters
International

IFW
Recipient of Energy Efficiency Award & Emerging Technology Award
MHI Heating Elements are Manufactured in the USA
MHI is a R&D100 Award Winner for Heating Elements (1999) and Furnaces (2001) and Plasma Airtorches™ (2004)

September 17, 2004



Revised Date: 09/16/2004

Application No. 10/726,487

Filing Date: 12/04/2003

First Named Inventor: Ramgopal Vissa

Confirmation No. 7523

Examiner: Fastovsky, Leonid M

Art Unit: 3742

Date Mailed by Examiner: 07/08/2004

Date Returned from Inventor: 09/17/2004

To: Examiner Leonid M. Fastovsky

We thank the examiner for his thoughtful analysis of our application. We request the following.

- 1) The abstract now expanded be made a part of the application (expanded abstract attached). The entire patent application is attached again duly marked for date and response. Please see modified claims on page 13 and 14 highlighting the swivel points.
- 2) The examiner is requested to accept the new drawings now enclosed. We have cancelled Figures 5 from the original application as it was a photograph. Figures 3 and 4 have been redrawn in the manner suggested by the examiner. Figure 5 as shown in the attached modified application is a drawing of the photograph. Figure 6 is retained and redrawn according to examiner's comments. A new Figure 7 is attached. Should the examiner deem this new matter please use the date of this letter as the date of any new matter. A detailed explanation of figures is now given on pages 10, 11 and 12.
- 3) The claims are modified are on pages 13 and 14 in order to make them allowable. The claims have been reworded based on the examiner's analysis. Any addition is shown in italics. Deleted language has been crossed out.

We are also respectfully giving below our analysis of the significant differences from the patents cited against our claims after providing a brief background paragraph again given below.

As background, we point out that our invention was conceived to overcome the inherent problems in die heating and paint removal. There are significant heating problems in die heating which cannot be addressed by conventional IR heating or convection. Although convection gives uniformity, convection is slower than infrared heating. Speed of heating is important in order to have high productivity. However, infrared heating is known to produce non-uniformities because radiation is a line of sight heating system. Our invention is a way of overcoming this non-uniformity issue by providing flexible systems. In the case of paint removal, convection can

cause harmful vapors to spread, hence IR heating is preferable, if again, there are ways of heating corners and bends. Our claims allows this usage also by use of the invented flexible system.

The examiner in his ruling of 07/08/2004 points out that:

“Campbell (5,915,072) teaches an infrared heater apparatus 10 comprising a module 16 having 2 infrared heaters 16, the module 16 includes a housing 18 rotatably coupled to a support 20, the heater inherently capable of being used as a convective heat generator”. Our comments:

- 1) Note that a 180° rotation along the normal axis to the bulb axis is not possible by the Campbell patent (5,915,072) (please see figure 2 in Campbell Patent). The system lacks two swivel points. Thus the 35 U.S.C. 102(b) rejection should not be applicable.
- 2) Additionally, in 5,915,072, a 360° rotation even if possible on the post is not possible in conjunction with a 180° rotation (again see figure 2 in Campbell Patent). Only the canopy 16 may be pivotable in Campbell (5,915,072). Again this goes to the 35 U.S.C. 102 rejection not being applicable as the Campbell patent (5,915,072) lacks swivel points.
- 3) We respectfully wish to point out to the examiner that the Campbell patent is limited in use for a surface heater as Campbell et. al. (5,915,072) deliberately reduce the heating efficacy (Col 2 Line 13-16), and (Col 15 Line 9-10). Only by limiting the infrared potential are Campbell et al able to have a post under the lamp (20 in Figure 2). However, such a post is likely to heat and distort if the full infrared range of heating was allowed. In this respect Campbell et al mainly teach away from our invention as we have no restriction on the IR usage. In fact our need is to increase productivity which implies using full power. By following the Campbell patent (5,915,072) one could not have arrived at our invention.
- 4) Additionally, without the presence of the frame shown in our invention (our figure 3) the swiveling is clearly not possible for the Campbell invention (5,915,072).
- 5) As the Campbell (5,915,072) invention is not similar or even points towards our invention, we request that the rejection under 35 U.S.C. 103(a) of combining Campbell and Stephansen (4,494,316) (which in actuality teaches only fixed support Col. 6 Line 9) be removed. Itogawa (4,292,985) at the best has no obvious swivel points and multiple modules are not possible. Our invention goes towards a fully flexible system with multiple modules.
- 6) The 35 U.S.C. 103(a) rejection on account of combining Campbell and Van Putten (5,533,567) is similarly requested to be removed. 5,533,567 teaches a rigid structure and only claims rotation of an injected fluid not the rotation of the heater. These are not equivalent for heat flow as one is convective and the other (our invention) is radiative (preferred).

The other prior art cited 4907533, 3953100 and 6437292 and 3761678 do not teach our invention. There is no flexibility provision in 4907533 and it teaches a rigid structure. 3953100 teaches again a rigid lamp holder. 6437292 claims a cart (this neither gives a 180° rotation or a 360° rotation) and has no swivel points. 3,761,678 also teaches a rigid module albeit with a plurality of lamps.

We sincerely hope we have shown that our invention is unique and the claims may now be in a manner to be allowed. Thank you.

Respectfully,

R. Vissa, Venkata Burada and John Carson (Inventors)

A handwritten signature in black ink, appearing to read 'J.A. Sekhar', written over a horizontal line.

Filed by J.A. Sekhar, Company representative for the inventors (Customer #046213)



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A Flexible Die Heater

Ramgopal Vissa, Venkata Burada and John Carson

(Response to Office Action Dated 07/08/2004)

Assigned to:

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